WE CLAIM AS OUR INVENTION

1. A processing system for a magnetic resonance tomography apparatus, said magnetic resonance tomography apparatus having a gradient coil system that generates magnetic gradients exhibiting non-linearities, said processing system comprising:

a display screen;

a processor connected to said display screen, said processor generating a user interface on said display screen allowing graphic scan planning based on a previously-obtained MRT overview image of a subject that was obtained using said gradient coil system and thus exhibits a distortion due to said non-linearities, said distortion in said overview image being corrected by said processor, using stored data accessible by said processor representing said non-linearities, to correct distortions in said overview image due to said non-linearities, thereby producing and displaying a corrected overview image; and

said processor, in said user interface, graphically demarcating an area of said corrected overview image in which positioning of an additional, planned slice of the subject, from which MR data are to be acquired, will result, due to the distortion correction in said corrected overview image, result in said data being acquired from an actual slice of the subject that deviates from said planned slice, from an area of the corrected overview image in which positioning of said additional, planned, slice will not cause said planned slice to deviate from said actual slice.

2. A processing system as claimed in claim 1 wherein said MRT apparatus has an isocenter and has a displaceable support table adapted to receive the subject thereon to acquire said data, the subject having a subject axis, and wherein, if said additional, planned slice has a transverse orientation relative to said subject axis, said processor automatically calculates and generates control signals for supply to said support table to cause the support table to move the subject to bring the actual slice, corresponding to the planned slice, into the isocenter.

3. A processing system as claimed in claim 1 wherein said processor comprises a memory in which said stored data are stored, said stored data comprising data representing the non-linearities that were measured once before delivery of said MRT apparatus.

4. A processing system as claimed in claim 1 wherein said processor automatically generates said graphic demarcation.

5. A processing system for a magnetic resonance tomography apparatus, said magnetic resonance tomography apparatus having a gradient coil system that generates magnetic gradients exhibiting non-linearities, said processing system comprising:

a display screen;

a processor connected to said display screen, said processor generating a user interface on said display screen allowing graphic scan planning based on a previously-obtained MRT overview image of a subject that was obtained using said gradient coil system and thus exhibits a distortion due to said non-linearities, said distortion in said overview image being corrected by said processor, using stored data accessible by said processor

representing said non-linearities, to correct distortions in said overview image due to said non-linearities, thereby producing and displaying a corrected overview image; and

said processor, in correcting said overview image, also correcting a distortion due to said non-linearities in an additional, planned slice that is planned based on said overview image, thereby obtaining a distortion-corrected planned slice, and graphically displaying said distortion-corrected planned slice in the corrected overview image.

6. A processing system as claimed in claim 5 wherein said MRT apparatus has an isocenter and has a displaceable support table adapted to receive the subject thereon to acquire said data, the subject having a subject axis, and wherein, if said additional, planned slice has a transverse orientation relative to said subject axis, said processing system automatically calculates and generates control signals for supply to said support table to cause the support table to move the subject to bring the actual slice, corresponding to the planned slice, into the isocenter.

7. A processing system as claimed in claim 5 wherein said processor comprises a memory in which said stored data are stored, said stored data comprising data representing the non-linearities that were measured once before delivery of said MRT apparatus.

8. A method for operating a magnetic resonance tomography apparatus, said magnetic resonance tomography apparatus having a gradient coil system that generates magnetic gradients exhibiting non-linearities, a processor, and a display screen connected to the processor, said method comprising the steps of:

obtaining an MRT overview image of a subject using said gradient coil system, said overview image exhibiting a distortion due to said non-linearities;

correcting said overview image in said processor, using stored data accessible by said processor representing said non-linearities, to correct said distortion in said overview image due to said non-linearities, thereby producing a corrected overview image;

displaying said corrected overview image on said display screen in a user interface on said display screen allowing graphic scan planning based on said corrected overview image; and

said processor, in said user interface, automatically graphically demarcating an area of said corrected overview image in which positioning of an additional, planned slice of the subject, from which MR data are to be acquired, will result, due to the distortion correction in said corrected overview image, in said data being acquired from an actual slice of the subject that deviates from said planned slice, from an area of the corrected overview image in which positioning of said additional, planned, slice will not cause said planned slice to deviate from said actual slice.

9. A method for operating a magnetic resonance tomography apparatus as claimed in claim 8 wherein said MRT apparatus has an isocenter and has a displaceable support table adapted to receive the subject thereon to acquire said data, the subject having a subject axis, and comprising the steps of, if said additional, planned slice has a transverse orientation relative to said subject axis, automatically calculating and generating control signals in said processor for supply to said support table to cause the support table to move the subject to bring the actual slice,

corresponding to the planned slice, into the isocenter.

10. A method for operating a magnetic resonance tomography apparatus as claimed in claim 8 comprising measuring said stored data representing the non-linearities that once before delivery of said MRT apparatus.

11. A method for operating a magnetic resonance tomography apparatus as claimed in claim 8 comprising automatically generating said graphic demarcation.

12. A method for operating a magnetic resonance tomography apparatus, said magnetic resonance tomography apparatus having a gradient coil system that generates magnetic gradients exhibiting non-linearities, a processor, and a display screen connected to the processor, said method comprising the steps of:

obtaining an MRT overview image of a subject, said overview image exhibiting a distortion due to said non-linearities;

correcting said overview image in said processor, using stored data accessible by said processor representing said non-linearities, to correct said distortion in said overview image due to said non-linearities, thereby producing a corrected overview image;

displaying said corrected overview image on said display screen in a user interface on said display screen allowing graphic scan planning based on said corrected overview image; and

said processor, in correcting said overview image, also correcting a distortion due to said non-linearities in an additional, planned slice, planned based on said corrected overview image, thereby obtaining a distortion-corrected slice, and graphically displaying said distortion-corrected slice in the corrected overview image.

13. A method for operating a magnetic resonance tomography apparatus, as claimed in claim 12 wherein said MRT apparatus has an isocenter and has a displaceable support table adapted to receive the subject thereon to acquire said data, the subject having a subject axis, and comprising the steps of, if said additional, planned slice has a transverse orientation relative to said subject axis, automatically calculating and generating control signals in said processor for supply to said support table to cause the support table to move the subject to bring the actual slice, corresponding to the planned slice, into the isocenter.

14. A method for operating a magnetic resonance tomography apparatus, as claimed in claim 12 comprising measuring said stored data representing the non-linearities once before delivery of said MRT apparatus.

15. A method for operating a magnetic resonance tomography apparatus, as claimed in claim 12 comprising automatically generating said graphic demarcation in said processor.